

Investigation of hydrogen adsorption on carbon-zeolite composites

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We have investigated carbon-zeolite composites as potential hydrogen storage material. The zeolites were synthesized hydrothermally following the conventional method. The carbon was introduced into the zeolite pore using ethylene as a precursor with following decomposition in vacuum at 1073 K. The structural integrity of the zeolite containing carbon was collapsed but the pore was accessible for nitrogen at 77 K. The quantities of the hydrogen adsorption at 77 K were the same before and after the introduction of carbon into the pore of the zeolite, respectively. The amount of carbon in the carbon-zeolite composites was estimated to be no less than 1.3 wt% referred from the results of the SEM/EDX. In the present work, carbon-zeolite composites were prepared and characterized with SEM, EDX, TEM, XRD, BET, TPO and Hydrogen adsorption measurement.